REMARKS/ARGUMENTS

Claims 1-12, 14-16, and new claims 17-19 are pending in this application. Claims 1-16 have been rejected. Claims 1, 14 have been amended, claim 13 has been canceled, and new claims 17-19 have been added, to more particularly point out and distinctly claim the subject matter of the present invention. Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

As discussed in further detail below, Applicant submits that dependent claims 10 and 13 are not unpatentable in view of the cited references. Accordingly, independent claims 1 and 14 has been amended to include the evanescent coupling elements of claim 13. New independent claim 18 is directed to similar subject matter as amended claim 1 but is written in means plus function format. New independent claim 19 contains the elements of claim 1 and dependent claim 10 (and intervening claims).

Rejections Under 35 U.S.C. § 112(2)

In paragraph 4 of the Office Action, the Examiner rejected claims 1-16 under 35 U.S.C. § 112(2). The Examiner stated that, regarding independent claims 1 and 14, the claims fail to recite the structure of a planar lightwave circuit, how relation between the primary waveguide and secondary waveguide in the PLC; and that the claims fail to recite the structure of the filter in order to generate a signal related to the intensity of the light.

Independent claims 1 and 14 have been amended to specify that the secondary waveguide is embedded in said substrate, wherein a portion thereof is located close enough to a portion of the primary waveguide so that said first secondary waveguide receives a first portion of said light from the tunable laser by direct or indirect evanescent coupling from said primary waveguide. See Specification, page 46, line 24, to page 47, line 8, which provides:

> Fig. 12 shows the functional relationship between the main waveguide 1221 and the splitter waveguides 1222, 1223. Several structures can be used to couple portions of the VCSEL output from the main waveguide 1221 to the splitter waveguides 1222, 1223. In an embodiment, the splitter waveguides use evanescent coupling to tap off a portion of light from the main waveguide 1221 or another of the splitter waveguides which is itself directly or indirectly coupled to the main waveguide. In this embodiment, the waveguides are arranged so that a portion of each of the splitter waveguides is located in close proximity and parallel to a portion of the main waveguide. This proximity allows for evanescent waves corresponding to the VCSEL output in the main waveguide to propagate through the splitter waveguides. Thus, in this embodiment, each secondary waveguide receives a respective portion of light, from the primary waveguide, by either direct or indirect evanescent coupling from

said primary waveguide. A secondary waveguide receives its respective portion of light from the primary waveguide by direct evanescent coupling if it is directly adjacent said primary waveguide so that there is evanescent coupling between the two. If a secondary waveguide receives a portion of light from another secondary waveguide (which is itself either directly or indirectly evanescently coupled to the main waveguide), by either evanescent or other coupling, it may be said to be indirectly evanescently coupled to the main waveguide.

Applicant submits that claims 1 and 14, as amended, adequately recite the structure of the PLC and the relation between the primary waveguide and secondary waveguide. New independent claim 18 has similar language, drafted in means plus function format. New independent claim 19 does not include the evanescent coupling limitation, and specifies that, in addition to the primary an secondary waveguides embedded in the substrate, the PLC module comprises tapping means for coupling the secondary waveguide to the primary waveguide so that the first secondary waveguide receives a first portion of tunable laser light from the primary waveguide. See, e.g., Specification, page 46, line 24, to page 47, line 14; page 48, lines 28-31; elements 1215 and 1310, Figs. 12 and 13, respectively. Applicant submits that new independent claims 18 and 19 also adequately recite the structure of the PLC and the relation between the primary waveguide and secondary waveguide.

Regarding the recitation of the structure of the filter in order to generate a signal related to the intensity of the light, independent claims 1 and 14 have been amended to claim a filter means, which corresponds to the structure disclosed in the Specification. See 35 U.S.C. § 112(6), providing that: "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof"; Specification, page 47, line 27 to page 49, line 13; filter 1227, Figs.12-13; Fig. 16. Applicant respectfully submits that the § 112(2) rejections have been overcome.

Rejections Under 35 U.S.C. § 102(e) and § 103(a)

In paragraph 5, the Examiner rejected claims 1-5 and 13-16 under 35 U.S.C. § 102(e) as being anticipated by Yamashita et al. (U.S. Pub. No. 2001/0053265). In paragraph 7, the Examiner rejected dependent claims 6-9 under 35 U.S.C. § 103(a) as being unpatentable over Yamashita et al. in view of Lemoff et al. (U.S. Pat. No. 5,894,535). In paragraph 8, the Examiner rejected dependent claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Yamashita et al. and Lemoff et al. in view of Chang-Hasnain et al. (U.S. Pat. No. 6,233,263).

In the § 102(e) rejection of claims 1-5 and 13-16, including dependent claims 4 and 13, the Examiner stated that Yamashita et al. discloses a PLC module (para. 0035) for conditioning light output from a tunable laser designed to generate light at a target wavelength, the PLC module comprising: a substrate (20) (para. 0035); a primary waveguide (16c) embedded in the substrate, the primary waveguide having an input end for receiving light from the tunable laser and an output end for outputting said light (see Fig. 2); at least a first secondary waveguide (16b) embedded in the substrate (20), the first secondary waveguide receiving a first portion of the light from the tunable laser; and a filter (30) having a passband centered on the target wavelength and coupled to an output of the first secondary waveguide (16b) to receive said first portion of light, wherein the filter (30) is adapted to generate a signal related to the intensity of the first portion of light in the passband centered on the target wavelength (para. 0070), a power monitoring photosensor (PD1 and PD2).

Dependent Claim 10: Multilayer Stack Filters

Dependent claim 10 specifies a multiple-output filter having a plurality of substantially identical distributed dielectric multilayer stack filters, where each multilayer stack filter has a passband *determined in part by the angle at which filtered light impinges on said filter*. A plurality of secondary filter waveguides are arranged so as to terminate at a unique angle with respect to each corresponding multilayer stack filter, so that each multilayer stack filter has a passband centered on a respective one of the plurality of target wavelengths. See Specification, page 48, line 22 to page 49, line 13; Fig. 13.

Although dependent claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamashita et al. and Lemoff et al. in view of Chang-Hasnain et al. (U.S. Pat. No. 6,233,263), none of the cited references teach this claimed feature. Chang-Hasnain et al. teaches tilting a reflective device having an angular dependence of wavelength reflection, so that each of several identical photodetectors each receives a different wavelength of light reflected from the reflecting device/filter. Chang-Hasnain et al., Fig. 4; Abstract; col. 5, lines 4-14. Fig. 4 of Chang-Hasnain shows that the emission from laser diode 12 strikes the reflective surface of filter 20 at different angles, thereby reflecting different wavelengths of light. Each reflected beam thus has a different wavelength, and each strikes a unique photodiode 28, 24, and so on.

Thus, Chang-Hasnain teaches a single filter, which reflects the desired reflected band depending on the angle of incidence. By contrast, Applicant's claimed invention has a *plurality* of distributed dielectric multilayer stack filters, each of which has a portion of tapped light impinging thereon at a unique angle. This angle affects the light that is passed by the filter, which is then received by its respective photodiode. This is unlike Chang-Hasnain et al., which reflects a desired reflected band of light from a single mirror, onto a plurality of photodiodes. Applicant's invention allows for the exact angle desired to be applied to each filter, since there are a plurality of independent filters, one for each photodiode. The applicable angles of reflection in Chang-Hasnain et al., by contrast, are selected by a combination of the tilt of the mirror (which affects all of the photodiodes, not just the one of interest), and by the lateral spacing/positioning of the photodiodes. Thus, Chang-Hasnain's method requires, for a given tilt angle of filter 20, that each photodiode 28, 24 be placed on the substrate 26 at the proper position to receive the properly angled and thus filtered reflected light.

Applicant's invention does not require the photodiodes to be spaced laterally in this manner; rather, each photodiode is positioned to receive whatever light is passed through the passband of its own unique filter; and each filter can have its own angle of incidence independently selected, unlike Chang-Hasnain et al., which requires the reflector 20 to be tilted at a single angle which affects all photodiodes. Accordingly, Applicant's claimed plurality of distributed dielectric multilayer stack filters provides features not taught or suggested by Chang-Hasnain et al. and provides advantages not attainable or suggested by Chang-Hasnains's different filter scheme.

Accordingly, Applicant respectfully submits that dependent claim 10 should not have been rejected based on the cited references, under either § 102(e) or § 103(a). Applicant submits that new independent claim 19, which contains the elements of claim 1 and dependent claim 10 (and intervening claims), is therefore in condition for allowance.

Dependent Claim 13: Evanescent Coupling

Dependent claim 13 (now canceled) specified that the first secondary waveguide receives a first portion of said light from the tunable laser by direct or indirect evanescent coupling from said primary waveguide. See Specification, page 46, line 24, to page 47, line 8, and quoted language above. Although dependent claim 13 was rejected under 35 U.S.C. § 102(e) as being anticipated by

Yamashita et al., neither Yamashita et al. nor the other cited references teach the features specified in dependent claim 13. Accordingly, Applicant submits that claim 13 should not have been rejected based on the cited references. As noted above with respect to the § 112(2) rejection, independent claims 1 and 14 have been amended to include the evanescent coupling feature of now-canceled dependent claim 13. Applicant therefore submits that claims 1 and 14, as amended, are in condition for allowance, as are their variously dependent claims. New independent claim 18, drafted in means plus function format, also specifies the evanescent coupling feature, and is also in condition for allowance.

In view of the foregoing remarks and amendments, the pending claims, as variously amended, are believed to be in condition for allowance. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

The Assistant Commissioner for Patents is hereby authorized to charge any additional fees or credit any excess payment which may be associated with this communication to our deposit account **50-1705**.

The undersigned may be contacted for any questions.

Respectfully submitted,

Date: December 2, 2003

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